PUBLIC HEALTH

Migrant men: a priority for HIV control in Pakistan?

A Faisel, J Cleland

Sex Transm Infect 2006;**82**:307–310. doi: 10.1136/sti.2005.018762

See end of article for authors' affiliations

Correspondence to: Dr John Cleland, Centre for Population Studies, London School of Hygiene and Tropical Medicine, 49–50 Bedford Square, London WC1B 3DP, UK; john.cleland@lshtm.ac.uk

Accepted for publication 18 January 2006

Objectives: To assess sexual risk behaviour and prevalence of treatable sexually transmitted infections (STI) in migrant male workers in Lahore, Pakistan.
Methods: Behavioural interviews were conducted on a representative sample of 590 migrant men aged 20–49 years. Biological samples were collected from a subsample of 190 and tested for chlamydia, gonorrhoea, and syphilis.
Results: Over half (55%) of single men were sexually experienced and 36% of married men reported premarital sex. The median ages at first intercourse and first marriage were 21 years and 28 years, respectively. In the total sample (including virgins), 13% reported any female non-marital partner in the past 12 months, 7% contact with a female sex worker, and 2% sex with a man. Only 10% reported using a condom during most recent contact with a sex worker. STI symptoms in the past 3 months were reported by 8% of men. Laboratory tests disclosed that STI prevalence was 3.2%.
Conclusions: If and when HIV infection spreads among sex workers in Lahore, the reported behaviour of migrant men suggests that they may act as a conduit for further transmission to the general population. Condom promotion focused on the sex trade is likely to be the most effective way of reducing this risk.

HIV epidemics in Asia are characterised by their diversity but, typically, have started with rapid rises in infection among injecting drug users (IDU) followed by transmission to those who buy and sell sex.[1] Behaviours associated with the early phase of epidemic spread have been documented in Pakistan by mapping of vulnerable groups in nine medium sized cities.[2] For instance, in Peshawar 1500 female sex workers, 900 male sex workers and 55 IDU were identified, However, HIV appeared to be almost totally absent from the country until the results were released from surveillance surveys of high risk groups in Karachi and Lahore, conducted in 2004.[3] In Karachi, HIV prevalence was found to be 23% in IDU, and 4% in male sex workers. HIV prevalence was much lower in female sex workers but, in both cities, high levels of treatable sexually transmitted infections (STI) were found and about 25% reported sexual contact with IDU. Pakistan is clearly on the brink of a potentially severe epidemic.

The presence of HIV in high risk groups in Pakistan's largest city underscores the need to study ways in which infection might spread to the general population, most probably through the male clients of sex workers who then infect current or future wives. Such ''bridging'' behaviour is likely to be most common among men who leave their natal or marital homes to seek work in cities. The association between labour migration and high risk behaviour is well established in other societies.[4] In Pakistan their potential epidemiological significance is illustrated by consideration of sex ratios: 117 males per 100 females in urban areas compared with equality in rural areas in the age band 20–49 years.[5] These figures suggest that, at any one time, at least one million men have left their rural families to seek work or study in towns or cities.

This paper presents key results from an exploratory study of migrant men in Lahore, Pakistan's second largest city.[6] The aim was to clarify the potential role of this segment of the population in HIV transmission and thereby inform preventive strategies. Specific objectives included measurement of key STIs and relevant risk factors, with an emphasis on sexual behaviour and condom use. We believe this study to be the first in Pakistan that has gone beyond the conventionally defined high risk groups in collecting such information.

METHODS

The sampling strategy was designed to provide a broadly representative sample of migrant men in Lahore and to do so in a replicable and cost effective manner in order to permit comparable future surveys, if needed, to track trends. All census blocks in Lahore were ranked by sex ratio of the adult population, as enumerated in the 1998 census. From a total of 123 blocks with a sex ratio of 130 or more, 19 were systematically selected with probability proportionate to number of adult men. In each selected block, all dwellings were enumerated and the location of all migrant men aged 20–49 years was recorded. Migrants were defined as those who had spent 50% or more of the past 6 months living in Lahore away from their natal or marital home. This list of migrants formed the second stage sampling frame. The target sample size was 600 men for the behavioural interview and a subsample of one in three (that is, 200) for the biological data collection. In anticipation of 80% participation, it was decided to select about 760 subjects. Plans were made to subsample from the list of migrants in order to avoid exceeding the target sample size (and thus exceed the limited budget for the study) but this proved necessary in only one block. Provision was also made to impose a subsampling rule for dwellings that contained five or more migrants to avoid interviewing large numbers of men from the same dwelling who probably possessed similar characteristics. This rule was applied in only 17 dwellings. Subsampling for biological data collection was effected as follows; in even numbered blocks every third subject was offered laboratory tests and in odd numbered blocks every second subject was similarly offered. These fractions were based on an assumption that participation might be as low as 60%. In the event it was higher and,

Abbreviations: IDU, injecting drug users; PCR, polymerase chain reaction; RPR, rapid protein reagin; STI, sexually transmitted infections; TPHA, *Treponema pallidum* haemagglutination assay

accordingly, the ratio was reduced to one in four in the last eight blocks.

Non-biological information was obtained by structured interviews conducted by six specially trained field staff. Each interview lasted on average about 20 minutes. The questionnaire covered the indicators recommended by UNAIDS for second generation surveillance, together with questions on mobility, general health and lifestyle, iatrogenic risk factors, STI symptoms, and treatment. Following the interview preselected subjects were given an explanation of the biomedical procedures before obtaining written informed consent. Two options were offered, either to visit a nearby temporary clinic, staffed by a doctor and a phlebotomist, where a clinical examination and treatment or referral were available free of charge or to donate blood and urine samples at home. If the latter option was preferred, the phlebotomist was contacted by mobile telephone and came to the dwelling. Blood samples were taken using disposable syringes while urine samples were collected in sealable sterile containers. Samples were placed in ice boxes and transferred to the laboratory within 7 hours of collection. Laboratory tests were done at the Shaukat Khanum Memorial Cancer Hospital and Research Centre. Chlamydia and gonorrhoea infection was tested by polymerase chain reaction (PCR) on urine samples and syphilis was detected by rapid protein reagin (RPR) plus *Treponema pallidum* haemagglutination assay (TPHA) confirmation for positive cases. Retesting was performed on a 10% subsample. Feedback of results was done mainly by post though a few subjects preferred to collect them from the project office. Ethical approval was obtained from the London School of Hygiene and Tropical Medicine.

RESULTS

A total of 759 men were selected for interview, of whom 590 gave complete interviews, a participation rate of 78%. A total of 210 were selected for the biological component and 195 urine samples and 188 blood samples were collected and tested.

The mean age of interviewed migrants was 25 years. Over half (53%) were single and the median age at marriage was 28 years; 75% were Punjabis; 20% had no formal schooling and a similar proportion had college education; 33% were skilled or unskilled manual workers, 16% watchmen or security guards, 14% students, while the remainder belonged to a wide variety of occupational groups. On the basis of the value of household possessions, 54% were classified as poor, 28% as lower middle income, and 34% as middle income. The median length of time away from home was 3 years, though most men visited their families once a months or more frequently. In Lahore, the majority (70%) lived with friends with over three quarters sharing a bedroom. Three quarters reported that they had never taken alcohol.

Over half (55%) of single men were sexually experienced and 36% of married men reported premarital sex. The median age at first intercourse was 21 years. Excluding wives, 16% of first partners were female sex workers, 2% male sex workers, 8% male friends or relatives, while the majority (74%) were described as female friends or relatives.

Among the 447 sexually experienced respondents, lifetime experience of specific types of sexual partner was as follows: female friend/relative 48%; female sex worker 22%; male sex worker 6%; male friend 8%; and hijray (transvestite) 3%.

Respondents were asked a detailed sequence of questions about sexual conduct in the past 12 months. Key results are shown in table 1. In the total sample (including virgins), 13% reported any non-marital partner, 7% sexual contact with a female sex worker, and 2% sex with a man. Non-marital sex was more common among young single men than older married men. No significant differences were found by educational background but skilled workers, house servants/drivers, and business or salesmen were more likely to report non-marital sex than other occupational groups. A positive link between household wealth (a surrogate for income) and contact with sex workers was found but no associations with frequency of home visits or living arrangements in Lahore were apparent (data not shown).

Table 1 Correlates of non-marital sexual contact in last 12 months, migrant men, Lahore, Pakistan

Correlates	No	Had one or more female non-marital partner (%)	Had sex with female sex worker (%)	Had sex with man (%)
Marital status				
Single	308	19.5*	11.4*	2.9*
Currently or formerly married	277	5.4	1.8	0.4
Age (years)				
20–24	259	19.7*	10.4*	2.7
25–29	123	8.1	4.9	0.8
30–39	116	11.2	6	1.7
40–49	87	1.1	0	0
Education				
No school	117	12.8	7.7	0.9
1–5 primary	94	6.4	3.2	2.1
6–8 middle	122	17.2	8.2	1.6
9–10 matric	126	13.5	5.6	1.6
Higher	126	12.7	8.7	2.4
Occupation				
Skilled manual worker	95	20*	9.5	1.1
Unskilled manual worker	88	11.4	5.7	2.3
Watchman/guard	95	2.1	0	0
Student	81	8.6	7.4	1.2
House servant/drivers	78	19.2	9	1.2
Business/salesman	31	16.1	9.7	0
Other	116	14.7	8.6	4.3
Household wealth				
Middle	170	17.1*	12.4*	2.9
Lower middle	141	18.4	6.4	1.4
Poor	274	7.3	3.6	1.1
All	585	12.8	6.8	1.7

*Statistically significant associations ($p<0.05$).
†Effective sample size is reduced from 590 to 585 because of missing values.

A total of 499 non-marital partners were reported in the past year; the mean number of partners among non-virgins was 1.4. The most numerous category (n = 211) was female sex workers. Because of the implications for HIV prevention, three types of sex worker were distinguished: brothel based, street workers, and call girls. At most recent contact all three types were equally represented. Only 10% of men used a condom at last contact and 72% said that they never used condoms with female sex workers.

The second most numerous type of partner was a female friend (n = 189). They were equally likely to be described as close or casual friends. One quarter of men used a condom at last contact. With male partners, condoms were very rarely used and only 4% of married men used a condom at most recent marital contact.

Signs and symptoms of STIs in the past 3 months were reported by 8% of men. Most had sought treatment from private practitioners. Only two urine specimens tested positive for chlamydia and one for gonorrhoea. Three positive cases of syphilis were found. The prevalence of STI infection was 3.2%.

While most of the sample (87%) was aware of AIDS, misconceptions were rife. For instance, almost two thirds thought that a good diet was protective and only 11% knew that an infected person could look healthy. Perceived personal risk of contracting HIV was low. Among those aware of AIDS who had a non-marital partner in the past year, 80% considered that they had no risk of infection.

The survey also inquired about exposure to non-sexual modes of transmission. Over two thirds of the sample had received at least one injection in the last 12 months, nearly all in the context of medical treatment, and 3.4% had sold blood.

DISCUSSION

The single most important finding from this study is that migrant male workers in Lahore report a sufficiently high level of unprotected sex to constitute a cause of concern for HIV control. While only 6% of all men reported unprotected contact with a female sex worker in the past 12 months, this figure rises to 11% in single men and further to about 20% if virgins are excluded. If HIV spreads among sex workers, most likely through contacts with IDU, then further transmission to the general population via young migrant men (and, of course, other clients) is a plausible scenario. The long gap between median age at sexual debut (21 years) and first marriage (28 years) has far reaching consequences because it implies 7 years of exposure to a variety of sex partners. In Pakistan, as in many other Asian countries, very strict codes of premarital conduct are applied to women but sexual activity among young men, while not approved, is viewed with a degree of tolerance. A continuation of the long-standing trend towards later marriage will surely serve to further increase sexual experimentation among single men.[7]

Sex between men in this sample was rare, much lower, for instance, than the level found in an Indian study.[8] Penetrative intercourse between men is strongly disapproved of and thus a degree of concealment is to be anticipated. Indeed, all estimates of non-marital sex should be regarded as lower bound ones. Validation of self reported sexual behaviour, of course, would be highly desirable but, in practice, the possibilities are extremely limited. One of the surprises of the study was the considerable proportion of men who had sexual relationships with close or casual female friends. Regrettably, little detail was ascertained about these relationships that, in view of the emphasis in Pakistan on female chastity, are likely to be clandestine. It was the impression of field staff that many of these female partners lived in the same neighbourhood and included married women. The epidemiological significance of this type of sexual mixing lies in the fact that the majority of men with non-commercial partners also had contact with sex workers.

Another surprising, and disappointing, finding was the very low level of condom use, confirming very similar results in the Family Health International study.[3] Condoms have been promoted for decades in Pakistan as a method of family planning and are widely available at affordable prices through social marketing programmes. Lack of access is not the problem, particularly in a large city. Perceived lack of need for STI protection must be the underlying reason and this interpretation is supported by the fact that condoms are more likely to be used with female friends (with whom pregnancy prevention may be important) than with female sex workers or men. In addition, migrant men in Lahore are so far almost totally unconcerned about HIV.

High levels of treatable STIs have been found in Lahore sex workers and thus the level of infection found in this study is surprisingly low. The explanation probably lies in ready access to treatment by private practitioners. The dominance of the private sector in STI treatment carries important practical implications. Little is known about the proficiency of private practitioners and focused research is a priority to establish the need for specialist in-service training, perhaps in collaboration with the Pakistan Medical Association.

Two other policy implications flow from the results of the study. Firstly, renewed information and publicity about STI/HIV protection is clearly needed to address low levels of knowledge and concern. Secondly, condom promotion needs strengthening. A greater investment in condom social marketing might be justified. Interventions focused on sex workers themselves have proved effective in other countries and merit attention in Pakistan.[1] The Pakistan Medical Association could collaborate with the National AIDS Control Programme to enlist the active support of private practitioners in condom promotion for patients with STI symptoms.

Finally, the study has made an important contribution in showing that community based inquiries on sexual behaviour are feasible, at least among men, even in a conservative society such as Pakistan. Participation in the behavioural interview was reasonably high and participation in biological data collection much higher than expected. The tactic of offering doorstep collection of specimens was crucial in this regard. The study also demonstrated that rigorous sampling of migrant men can be achieved, thereby vastly increasing the possibility of repeating surveys with truly comparable samples.

It is hoped that this study will encourage others to conduct community based research on HIV related topics in Pakistan. One urgent priority is learn more about the behaviour of migrant men in other cities, particularly Karachi where HIV infections appear to be concentrated, and to assess differences in the behaviour of migrants and non-migrants.

Key messages

- Only 10% of migrant men in Lahore, Pakistan use condoms with sex workers
- One in five sexually experienced single migrant men in Lahore report unprotected contact with a sex worker in past 12 months
- Migrant men in Lahore could fuel the emerging HIV epidemic in Pakistan

ACKNOWLEDGEMENTS

The study was sponsored by Interact Worldwide with the financial assistance of the European Union; however, the contents under no circumstances be regarded as reflecting the position of the European Union. The facilitation of National and Provincial AIDS Control Programme (Punjab), PMRC (Lahore), and community leaders (union council nazims) is duly acknowledged.

CONTRIBUTORS

Both authors designed the study and conducted the analysis. AF supervised fieldwork. JC drafted the paper.

Authors' affiliations

A Faisel, Arjumand and Associates, House 116, Street 20, F-10/2, Islamabad, Pakistan
J Cleland, Centre for Population Studies, London School of Hygiene and Tropical Medicine, 49–50 Bedford Square, London WC1B 3DP, UK

REFERENCES

1 **Monitoring the AIDS Pandemic Network (MAP) Aids in Asia**. Face the facts. 2004. http://www.mapnetwork.org/docs/MAP_AIDSinAsia2004.pdf.
2 **Arjumand And Associates**. Final report: identification and mapping of vulnerable groups. Islamabad: National AIDS Prevention and Control Programme, 2003.
3 **Family Health International, Pakistan**. National study of reproductive tract and sexually transmitted infections—survey of high risk groups in Lahore and Karachi. Islamabad: National AIDS Control Programme, Ministry of Health, Government of Pakistan and DFID, 2005.
4 **International Organization for Migration**, UNAIDS. ''Migration and AIDS'' *International Migration* 1998;**36**:446–68.
5 **Population Census Organization**. *1998 census report.* Islamabad: Statistics Division, Government of Pakistan, 1999.
6 **Arjumand And Associates and Centre for Population Studies, LSHTM**. Study of the sexual behaviours and prevalence of STIs among migrant men in Lahore, Pakistan. Sponsored by Interact Worldwide with European Union funding, Islamabad, 2005.
7 **Sathar ZA**, Kiani MF. Some consequences of rising age at marriage in Pakistan. *Pakistan Development Review* 1998;**37**:541–54.
8 **Verma RK**, Collumbien M. HIV epidemic in India: the potential contribution of homosexual behaviour. *AIDS* 2004;**18**:1845–47.